company upgrades the station to ensure sufficient signal strength for the more populous areas. The company also upgrades the studio for commercial and promotional spot productions. Then promotion of the station begins, including: surveys of viewer tastes, broadcast and billboard campaigns for exposure, and new graphics to give the station a network on-air look.[15]

Lastly, panelists advised conference attendees to stay small, minimize expenses, develop a track record and establish a vision of where your market will be in five to ten years. Then make it happen.

IV. FINANCING

Panelists emphasized that bank lending is one traditional source of financing. During 1990, bank lending to media businesses constricted. To some extent, this was due to the impact of the recent recession; it also could be attributed to the federal rules adopted in February 1990, which classified many loans as highly leveraged transactions (HLT). An HLT loan is defined as any loan above $20 million, where the transaction results in a liabilities-to-assets leverage ratio higher than 75%, or where the transaction at least doubles a company's liabilities and results in a liabilities-to-assets ratio higher

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15 See, "Independent TV's Atypical ABRY Communications", Broadcasting, p. 43, July 8, 1991.

than 50%, not considering cash flow.[16] These regulations have caused the banking industry to be cautious when lending money. Most financial institutions will not extend more than 5.5-6.0 times the station's trailing cash flow. Thus, during 1990 and most of 1991, loans were not as available to buyers; particularly for those who did not have sufficient equity capital. New entrepreneurs will likely have to continue to provide more equity in media deals. The Federal Reserve recently voted to phase out the HLT criteria after second-quarter 1992. It will take time to determine whether this action will significantly ease the current credit crunch.[17]

Due to the HLT phenomenon, panelists discussed "seller financing" as an option that should be explored. They explained that since many deals from the 1980s were highly leveraged, sellers must be willing to assist in reducing a buyer's debt load to a more moderate level. Today, buyers must be wary of assuming too much debt in any acquisition.[18]

Panelists also discussed investment companies as another source of funds. Many investment companies have focused increasingly on opportunities in communications ventures. During 1991, for example, several large partnerships were formed

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16 "Feds seek HLT comments: NAB Preps Response", Radio Business Reports, p. 16, Vol 8 Issue 28 July 15, 1991.

17 "HLT Monkey off Fifth Estaters' Backs", Broadcasting p. 16, January 27, 1992.

18 See, "Too Many Stations, Too Few Buyers and Depressed Prices", New York Times, p. F-10, June 30, 1991.

between investment companies and cable companies. Investment companies are a viable resource and should not be ignored.[19]

Foreign companies or foreign banks also were discussed by panelists as a valuable source of financing. Foreign banks can provide debt financing at favorable rates. Foreign companies can provide debt or equity capital. Current law under the Communications Act sets a general limit of 25% on foreign equity ownership of the capital stock for broadcast or common carrier licensees.[20] There is no similar general foreign ownership limit on cable companies.[21]

Another option highlighted by panelists are venture capital companies. Examples of such companies are UNC Ventures Inc., Broadcast Capital Fund, Inc. (BROADCAP), and Syndicated Communications (SYNCOM). Since 1977, SYNCOM, a minority owned venture capital firm, has financed over 60 minority ventures in communications. Some of its most recent projects have been Emerge Magazine, South Chicago Cable TV, and District Cablevision Inc., Washington, D.C. BROADCAP, formed in 1979, has helped finance the acquisition of approximately 40 broadcast stations for minority investors. UNC Ventures Inc, a private venture

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19 During 1991, the New York based investment firm Kohlberg, Kravis Roberts & Co. (KKR) and Cablevision Industries formed a partnership to acquire large cable systems. "KKR Seen as Boosting Systems Sales", Electronic Media, p. 1, July 1, 1991.

20 See 47 U.S.C. 310(b), License Ownership Restrictions.

21 See 47 U.S.C. 613 (ownership restrictions) and 47 U.S.C. 621 (general franchise requirements).

capital company formed over 20 years ago, also has helped finance the acquisition of several significant television and radio properties. These funds continue to provide a vital link to the industry for minority and female investors.[22]

There also are government-sponsored funding programs. One example is the Small Business Innovation Research Program (SBIR). SBIR is a government program that awards grants to help small businesses finance the research and testing of new products. This federal program has helped fund research conducted by over 5,000 small companies.[23] In addition, there are two types of government-sponsored funding available from the Small Business Administration that communications entrepreneurs can use: SBA-licensed small business investment companies[24] and SBA direct financial assistance. For complete information on these programs, contact the SBA.

Finally, panelists mentioned the possibility of obtaining financing from equipment manufacturers. Entrepreneurs were encouraged to seek opportunities in equipment or service resale,

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22 Entrepreneurs are advised to stay abreast of changing trends in the economy that could affect venture capital sources. "The Slow, Sorry Disappearance of Venture Capital", The Washington Post, p. C2, September 6, 1991.

23 "U.S. Funding Of Small Firms' Research Yields Results", The Wall Street Journal, p. B-2, October 2, 1991.

24 AT&T recently announced that the AT&T Small Business Lending Corporation (SBLC) has been approved as a licensed participant in the SBA lending program. AT&T SBLC expects to be fully operational by April 1992. For further information contact the SBA or AT&T SBLC.

where the acquisition of services and equipment can be financed by a manufacturer in exchange for the resale of certain services to the consumer.[25]

Chapter 5: WORKSHOP: SPECIFIC FIELDS

There were two plenary sessions and four daily workshop groups during the two-day conference which addressed business and regulatory issues in the following areas: Mobile Radio; Telecommunications; Cable and Wireless Cable; and Broadcast. Below, we summarize the pertinent information provided by conference sessions in each of the four areas. Specifically, we address the applicable oversight bureau within the agency which regulates these services on a day-to-day basis, some of the present and potential business opportunities identified in each of these areas, and, where discussed, some of the general business issues associated with these areas. In order to follow the discussion below, it may be useful to refer to Appendix 2, which provides a line diagram of various FCC Bureaus and Branches.

I. MOBILE RADIO

1. Regulation

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25 See Chapter 6, Section VII for a further discussion of the telephone equipment market.

The FCC regulates mobile radio services as either a private radio service or a common carrier service. Private radio provides services to private companies or individuals to help them operate more efficiently. Private radio services are regulated exclusively by the FCC, and are exempt from state regulation.[26] These services are discussed below in the next subsection. Common carrier services are provided to the general public on a nondiscriminatory basis. Telephone and cellular services are examples of common carrier businesses. Common carrier services are subject to both FCC and state regulatory authority. The extent of state and federal regulation varies. Local telephone companies, for example, are heavily regulated, while cellular carriers are lightly regulated.[27] The mobile radio workshops discussed services designated as private radio services. Within the FCC, private radio services are regulated on a day-to-day basis by the Private Radio Bureau and its various divisions. Private radio regulations appear in Parts 80 and 90 of the FCC's rules, contained in the Code of Federal Regulations (47 CFR).

2. Business Opportunities - Private Radio

The private radio industry offers several types of entrepreneurial business opportunities. Some examples of those

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26 See generally, 47 U.S.C. 332 of the Communications Act.

27 See Part II of this chapter for a further discussion of cellular services.

include Specialized Mobile Radio Systems (SMRS), Private Microwave Carriers (PMC), and Private Carrier Pagers, and support services such as installation and maintenance. These services are described below:

(a) Specialized Mobile Radio Service (SMRS)

SMRS is a private radio system licensed to eligible private individuals or entities that provides mobile communications service on a commercial, for-profit basis. In addition to SMRS providers, the users of SMRS mobile radio also must be licensed by the FCC. Services that may be provided include dispatch, interconnection with the public switched telephone network on a cost-pass-through basis, paging, and data transmission. There are approximately 280 channels allocated for this system in the 806-821, 851-866 MHz bands, and 200 channels in the 892-901, 935-940 MHz bands.

In addition, during 1991, 2 MHz were allocated in the 220-222 MHz band to create 400 narrow-band channels for private landmobile radio services. Channels in the 220 MHz band are only 5 KHz wide. The FCC has paired the 400 channels in the 220 MHz band to create 200 channel pairs; 140 of these channel pairs are designated for local use; 60 channel pairs are reserved for nationwide service.[28]

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28 See, "220-222 MHz Band", Channels, p. 13, Vol. 1 No. 3, October 1991. See also, 6 FCC Rcd 2356, Report and Order, PR Docket No. 89-552 (April 1991). More recently, the Commission issued a Notice of Proposed Rulemaking in this docket seeking

In addition to SMRS, there have been recent efforts to develop an Enhanced SMR service (ESMR). Fleet Call, Inc., the first entity to propose the ESMR concept, has been licensed to provide wide-area digital SMR service. ESMR is configured in multiple cell sites. This configuration permits a licensee to reuse spectrum by geographically subdividing its coverage area into a number of cells, and reusing its block of channels within the coverage area.

A vibrant digital SMR service that has the ability to transmit information from a variety of sources could allow the industry to serve a broader market of mobile radio users. Recent information on SMRS has heightened public awareness of its business potential. In our increasingly mobile society, communicating with people on the move is becoming more of a necessity than a luxury. Industry associations that provide information on the SMRS business include the National Association of Business and Educational Radio (NABER) and the American SMR Network Association, Inc.

(b) Private Microwave Carriers

Private Microwave Carriers are systems that provide fixed communications service on a commercial, for-profit basis to users

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comments on the feasibility of utilizing comparative hearings to select non-commercial or commercial applicants for this service. See, Amendments of Part 90 of the Commission Rules to Provide for the Use of 220-222 MHz Band by the Private Land Mobile Radio Services. PR Docket No. 89-552 (Adopted January 21, 1992).

who are eligible under Parts 80, 87, or 90, of the FCC's rules. These systems are regulated under Part 94 of the FCC's rules. Generally, they are used to transmit voice, data, or video information from a fixed point to another fixed point or to multiple fixed points. These systems can be used for meter reading or perimeter security systems. These services are provided by entrepreneurs to utility companies, private businesses, and residential consumers.

Private microwave carrier service in the 18 GHz band offers opportunities for small business entry into video communications.[29] Services operating in the 18 GHz band utilize point-to-multipoint microwave technology to relay satellite delivered video programming to satellite master antenna television (SMATV) systems.[30] Shared use of headends in the 18 GHz band by SMATV system operators is expected to reduce operating costs for those systems, thereby making SMATV more competitive with cable television systems. Because the 18 GHz allocation is relatively new, there are more potential licensing opportunities than in the traditional TV broadcast services.

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29 "Microwave Takes Off in LA, NYC", Multichannel News, September 2, 1991, p. 3.

30 SMATV systems are used to re-transmit satellite programming from receive-only satellite antennas to multiple dwelling units and other multi-unit premises without crossing public rights of way. SMATV is a low-cost alternative to cable in high-density areas that cable has not passed or where cable penetration is low.

(c) Private Carrier Pagers

Private Carrier Pagers provide one-way paging service on a commercial for-profit basis to persons eligible under Part 90 of the FCC's rules. Private Carrier Paging is an industry that is vigorously competitive. Success in the paging market requires business skill and cash flow. Services that can be offered include local and nationwide direct dial paging. There are approximately 38 channels allocated for this service in the 929-930 MHz band; 36 channels are for local service and 2 channels are for nationwide systems.

During 1990, the paging industry experienced subscriber growth of 22%, reaching 9.9 million subscribers. The industry is expecting a growth rate of 16% in 1991.[31]

(d) Other Services

There are other types of services offered in the private radio industry which are not described above. Thus, there may be additional opportunities for technical firms that can provide hardware construction, or system installation or maintenance for private radio services. Other market segments in which start-up costs are low include software development in support of private mobile system services and distribution of radio communications products.

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31 "It was a Very Good Year for Paging Subscriber Growth", Telocator, July, 1991, p. 8.

Appendix 3 provides additional overview information on private radio services.

3. Business Issues

(a) FCC Filings

To become a licensed private radio system operator, one must file an application for a license with the FCC. In order to get advice on this process, an individual should contact an attorney who specializes in communications and has experience in filing private radio applications at the FCC. In addition, a person could contact a private radio industry association such as NABER, the American SMR Network Association, Inc., or the Special Industrial Radio Service Association, Inc. (SIRSA). The application process for private radio systems can take as long as three to four months to complete. In some cases, licenses are awarded through a lottery process. Otherwise, licenses are obtained through assignment or transfer from an existing licensee.

(b) Market Concerns

There are several challenges an individual will encounter when trying to start a private radio service. Panelists offered the following tips:

(1) Be aware of the business environment. External market assessments are needed to evaluate the potential

niche the entrepreneur would serve. Personal assessments are needed to determine the qualities required to successfully operate a private radio business.

(2) Frequency coordination may be required to identify available radio spectrum space to operate a private radio system. An individual should be aware that within the allotted channels for private radio systems, spectrum space is becoming more limited, particularly in large metropolitan areas.

(3) A business plan is necessary to obtain funding from third party sources (i.e., banks, investors, insurance companies, or equipment manufacturers). This plan should be concise, and quantify the entrepreneur's business vision. Among other things, it also should describe the type of private radio market being served and estimate the demand for the service. Most importantly, the plan should identify a niche in the private radio market and position the business to compete effectively.

(4) Conduct a fair market valuation of old and new communications systems. This will give you some sense of future growth potential in the relevant market. Keep track

of the industry and regulatory trends through trade magazines and industry associations.

(5) Be persistent, honest, and ask for help or information from appropriate sources. Publications by NABER, SIRSA, the American SMR Network Association, and Mobile Radio Technology are examples of sources which may offer useful information.

II. TELECOMMUNICATIONS

1. Regulation

Common carrier services are regulated by both the FCC and regulatory bodies in each state where the services are offered. These services are offered to the public on a nondiscriminatory basis. Examples of these services are telephone, cellular carriers, mobile satellite services, and fixed satellite services. The FCC's Common Carrier Bureau and its operating divisions are responsible for day-to-day oversight of business activities in this area. Appendix 4 provides an overview of one type of common carrier service -- the cellular industry.

2. Business Opportunities

Telecommunications encompasses a wide range of service and equipment offerings, which together comprise one of the fastest

growing sectors of the economy.[32] The market for telephone services, including cellular, messaging and information, is expected to reach $175 billion by 1995, up from $137 billion in 1990. The overall telecommunications equipment market was $35.2 billion in 1990, and is expected to increase to $54.6 billion by 1996. The market for voice processing equipment may nearly double -- to $4.47 billion in 1995 -- from $2.4 billion in 1990. Data equipment revenue is forecast to increase to $10.9 billion by 1995, as compared to $8.8 billion in 1990. The CPE market is expected to reach $16.2 billion in 1991, from $13.2 billion in 1990, with a rise in sales for peripheral and secondary equipment accounting for some of that gain.[33]

Because wireline telephone companies, which include the local exchange carriers, are already serving 93% of this country's citizens with local telephone service, panelists indicated that there are few opportunities in this field for new entrants. Long distance carriers like AT&T, MCI and U.S. Sprint serve 90% of the private and public long distance market, which was valued at $52.1 billion in 1990.[34] Even in cellular telephone, there are only two providers per market -- a wireline (i.e., phone companies) and a non-wireline competitor. Further,

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32 See discussion on p. 3, supra.

33 See "1991 Telecommunications Market Review and Forecast", by the North American Telecommunications Association (NATA), 2nd edition as reported in Communications Daily, September 5, 1991.

34 Id.

mobile and fixed satellite services are being developed and offered by a few, well-capitalized entities. Thus, new entrepreneurs in the telecommunications area are more likely to serve smaller niche markets and that was the focus of the 1990 conference.

Areas identified as potential business opportunities by the conference panelists included:

> (1) Network design, network management and systems integration. The providers of these services are consultants or managers for medium and large businesses. They "shop" for the client in the telecommunications market for software, hardware, and transmission services. The systems integrator puts together the best package of services and equipment for the customer, and then manages the use and cost of the system. These entities are paid for their knowledge of current and future technologies and their expertise in applying this knowledge to design and operate the appropriate system applications. Network Solutions, Inc. is an example of a company which provides such services for the federal government under subcontracts with telecommunications companies like AT&T.[35]

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35 For more on the story of Network Solutions, Inc. and AT&T's Opportunity Fair Programs, see generally, "AT&T Federal Systems", Banner, Vol. 5, No. 6, September 1990.

(2) In the mobile services area, cellular-resale presents an opportunity for entrepreneurs to package and sell mobile service capacity that is not being utilized by the local cellular operator. The challenge here is to be able to compete in a market characterized by thin profit margins and increasing competition.

(3) The design, installation and management of Local Area Networks (LANS) or "smart office buildings" presents another opportunity for those who have expertise in integrating computers and telecommunications systems. LANS allow computers to talk to each other from different locations within a certain defined area. Smart buildings involve the integration of computer services into a building's communications system for purposes of monitoring electrical, heating and cooling systems.

(4) Enhanced Service Providers, like alarm services, voice messaging services, and information database services (i.e. local mortgage rates, sports scores, etc.) are examples of software information businesses that attract entrepreneurs. These are attractive opportunities for small business owners because of the relatively smaller start-up investment requirements. One company that exemplifies this type of service is 800-Direct in California. 800-Direct answers calls for companies, and either takes computerized orders,

fulfills orders at their headquarters, or relays orders and customer information back to the company via computer modem or fax.[36]

(5) Entrepreneurs also should consider small business procurement programs conducted by major telecommunications companies. For example, AT&T's Minority and Women Business Enterprise Program (MWBE) is intended to expand the number of minority and women suppliers contracting with AT&T.[37] This program also assists minority and women owners in identifying and obtaining operating capital for their enterprises. To be certified as an MWBE, a company must be 51% owned, controlled, and operated by women or minorities. If publicly held, at least 51% of the stock must be owned by women or minorities. Those owners must be U.S. citizens and must meet government-approved classifications. To become certified as an MWBE, a supplier must complete an application form which MWBE will send to buyers across the nation. This does not automatically result in business, but certified suppliers are referred to appropriate buyers across the nation. AT&T also participates in business development programs geared toward providing technical and

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36 "Support Services For Toll-Free 800 Lines Help Ring Up Sales," Washington Post, p. F-9, July 22, 1991.

37 This function is referred to as MWBE in almost every company that focuses on this area. The program name is not unique to AT&T.

financial support to minority enterprises such as the Business Consortium Fund and Regional Minority Purchasing Councils.[38]

(6) In addition to traditional telephone and cellular services, mobile satellite phone services will emerge during the early 1990s. Companies such as Motorola and major consortiums such as the International Maritime Satellite Organization (INMARSAT) are implementing or planning major mobile satellite phone system configurations. Start-up capital costs for these ventures are very high. New entrepreneurs with less capital should consider support service niches like transponder sales or maintenance, network software development or integration, or mobile equipment sales and services. In addition, small and large companies presently are conducting experiments to provide a new form of portable phone service called Personal Communications Services (PCS). PCS is expected to become a major new service over the next several years. Please refer to Chapter 6 of this report for more information on PCS.

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[38] U.S. Sprint also maintains a very active outreach program for minority vendors in both its government and private contracts. U.S. Sprint estimates that subcontracting to small and minority businesses could reach $43 million over the life of its ten-year FTS 2000 federal government contract.

(7) Other areas of potential opportunity include: (a) common carrier services that provide mass media communications and information services such as interactive television services; (b) faxed-based news services and computer bulletin boards, which represent relatively low-cost enterprises in the information services sector of the telecommunications industry[39]; (c) specialized paging systems; and (d) manufacturing and distribution of equipment, including CPE, computers or other transmission equipment and facilities.

3. Business Issues

These sessions highlighted the need to: (1) identify niche markets; (2) have access to technical expertise; (3) develop a solid business plan; and (4) obtain the necessary start-up capital. The sessions also identified niche markets for services to large communications companies such as network planning, systems integration, cellular resale or logistical supply. In general, panelists noted that support service areas provide lower entry barriers due to the lack of federal regulatory hurdles and lower start-up costs. Often, in these areas, a person can seek capital or potential financial assistance from

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39 "News Service Sends Radio Stations Nothing but the Fax", The Wall Street Journal, December 4, 1991, p. 32.

large communications companies seeking certain support service vendors.

III. CABLE AND WIRELESS CABLE

1. Regulation

The FCC Mass Media Bureau regulates various aspects of the cable business. Cable franchises are obtained through approval from local government authorities. Wireless cable operators are licensed to operate on certain frequencies by the FCC's Common Carrier Bureau. The Mass Media Bureau also is involved in regulating this service. Wireless cable operators are not subject to local licensing regulation.

2. Business Opportunities

(a) Cable

Initially characterized by small entrepreneurial firms, the cable television business has experienced significant consolidation in the last ten years, as multiple system operators consolidate their ownership of systems throughout much of the industry.[40] With that consolidation has come a rapid growth in the availability of capital, as cable firms have attained

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[40] A recent Salomon Brothers report predicts that consolidation in the industry will continue over the next four years resulting in 25 MSO's controlling 90% of the total subscribers compared with the 74% of total subscribers currently under control by the top 25 MSO's. "Top 25 MSO's Will Increase Ownership Over Next Four Years, Predicts Study", Broadcasting, p. 14, December 30, 1991.

"critical mass" sufficient to attract major lenders and investors.

Panelists indicated that today, cable is a more mature business and offers fewer opportunities for new entrepreneurs.[41] Most major cable systems are owned by large cable companies, and are franchised for ten to fifteen-year intervals. Opportunities to successfully challenge incumbent cable systems at the time of renewal are limited. Opportunities do exist in a small number of rural or newly-incorporated towns that are seeking entrants to build new cable systems.

Recently, other companies have been making entries into the cable market. Hallmark Cards, Inc. acquired Cencom Cable Associates in a deal estimated at $1 billion. In addition, the buy-out firm of Kohlberg Kravis Roberts & Co. is prepared to spend up to $1 billion to acquire cable assets.[42] With acquisition prices this high, opportunities for new, small business entry into cable operations remains limited. Major investor activity in the cable area is anticipated in the near

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41 A recent U.S. Commerce Department study projects slower growth for the cable industry as compared to previous years. The study predicts single-digit growth in the nineties will replace the double-digit growth of the eighties. See, U.S. Industrial Outlook '92, U.S. Department of Commerce. See also, "Cable Growth to Level Off, Commerce Study Says", Broadcasting, p. 6, December 30, 1991.

42 "Hallmark Unit to Acquire Cencom Stake in Transaction Valued at $1 Billion", Wall Street Journal, p. A-3, September 20, 1991.

future due to lower interest rates and anticipation of profits to be made from technological developments.[43]

Although new opportunities for cable system ownership may be limited, cable programming is still a burgeoning area for new entrepreneurs. The number of available national satellite-delivered cable services has increased, for example, from 43 in 1985 to 68 in 1991. There are also 45 regional cable networks. This trend is expected to continue as the cable industry upgrades the capacity and quality of its broadband network with the application of fiber optic technology and digital compression techniques. The use of fiber optics and digital compression will enable cable systems to deliver up to 150 channels in the near future.[44] This increased channel capacity is likely to result in additional demand for video programming and information services, particularly pay-per-view services.

(b) Wireless Cable

Last decade's story in the video services market was the rapid ascent of the cable television industry, which currently serves more than 60 percent of U.S. television homes. During the next decade, improved video technologies are likely to provide greater competitive choice for consumers.

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43 "Investors See Signs Of Life In Cable System Sales", Communications Daily, Vol. 11 No. 187, Sept. 26, 1991.

44 "Advanced Fiber-Optic Cable TV Link Planned, NY System Would Vastly Expand Amount, Nature of Programming", Washington Post, March 7, 1991; See also, "Cablevision Tests Digicable and Digisat as Cable Labs Issues Compression RFP", Broadcasting, p. 52, August 19, 1991.

Wireless cable represents one alternative technology to wireline cable service. To date, the growth of the industry has been hampered by regulatory impediments to licensing, and the limited availability of "sought-after" non-broadcast programming. During 1991, the FCC has taken actions to reduce regulatory licensing obstacles.[45] There also is some indication that programming is becoming more readily available to wireless cable operators.

Panelists noted two characteristics of wireless cable service that make it relatively attractive for the small entrepreneur. First, capital costs are relatively low, substantially lower than comparable multichannel conventional cable television. Moreover, the nature of the business dictates that demand for additional investment more closely correlates with subscribership.

Second, operating and maintenance costs are typically lower. Conventional cable television employs a "live wire" -- i.e., facilities which always have electrical current flowing through them -- which entails the associated maintenance, equipment and personnel costs to operate it. Wireless cable typically delivers a signal to a customer using a single or double "hop"; thus, the technical quality of the transmission can

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45 See, Amendment of Parts 21, 43, 74, 78 and 94 of the Commission's Rules Governing Use of the Frequencies on the 2.1 and 2.5 GHz Bands. Gen. Docket 90-54, Second Report & Order, September 26, 1991; and Order on Reconsideration, General Docket No. 90-54 and 80-113 September 26, 1991.

be the same as cable, and can be provided at a lower cost. Moreover, because wireless cable systems require less start-up capital than traditional cable systems, program services can be offered at lower prices.

Wireless cable opportunities for new entrepreneurs are projected to grow during the 1990s. Panelists emphasized that the critical hurdles will be to identify: (1) markets in which such services can compete with cable companies; (2) markets in which spectrum capacity is available to assemble a sufficient number of channels; and (3) program services that are available for such systems.

The microwave radio channels, allocated for wireless cable are primarily those in the Multipoint Distribution Service (MDS) and Multichannel Multipoint Distribution Service (MMDS). During 1991, additional channels were reallocated from the Private Operational-Fixed Microwave Service, or made available in the Instructional Television Fixed Service.

Unless acquired through acquisition or lease, wireless cable channels are obtained through a random lottery process at the FCC. Licenses have already been awarded for most large and medium sized cities, based on applications accepted in 1983. The FCC began accepting more applications in 1988 for the remaining smaller markets. Most recently, 35 MMDS licenses were awarded through a lottery process on October 2, 1991, in 22 states. Panelists noted that regardless of the size of the market, the

resale market for wireless cable licenses is still evolving.[46] There are currently about 350,000 subscribers nationwide.

Although wireless cable service is still evolving, previous major technical problems faced by wireless cable operators, such as limited frequencies to support channel capacity, limited transmission range, and dependence on line of sight transmission, have been addressed with new FCC rules, or through newer technical devices.

3. Business Issues

The U.S. Copyright Office is conducting a proceeding to determine whether the compulsory copyright licensing provisions of the Copyright Act apply to wireless cable systems. The compulsory licensing provisions apply to traditional cable systems, and the FCC advocates a broad definition of cable system under the Copyright Act in order to include wireless cable systems.[47] A contrary decision would mean that wireless cable systems would have to pay a substantially higher price for programming than traditional cable systems, thus eliminating one of the major competitive advantages for wireless cable.[48]

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46 "MMDS Lottery May Bolster Case For Auctions", Broadcasting, p. 66, October 7, 1991.

47 Cable Compulsory License; Definition of Cable Systems, Notice of Proposed Rulemaking, U.S. Copyright Office, Docket No. RM 86-7B, July 1991.

48 "Hughes Plans Informal Discussion on License", Broadcasting, p. 33, November 4, 1991.